THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR APRIL 1859.

ART. I.—*Contributions to the Literature of Carcinoma. I. On Transition Forms between Cancer and Innocent Growths. II. Anatomy of a Case of Retrograde Cancer.* By J. J. WOODWARD, M. D., of Philadelphia.

I. *On Transition Forms between Cancer and Innocent Growths.*—In a paper on the "Anatomical Diagnosis of Cancer," published in the *American Journal of the Medical Sciences* for January, 1859, in speaking of the distinctions between cancer and innocent connective tissue formations, I made use of the following language: "At the same time, I am disposed to admit the existence of transition forms, of which, standing as they do upon the boundary-line, no dogmatic opinion can be given." Since the publication of that paper, I have had, through the kindness of Professor Henry H. Smith, an opportunity of studying the minute anatomy of a tumour removed by him at the surgical clinic of the University of Pennsylvania. This tumour appeared to me, after a careful investigation, to deserve a place in the category of transition forms. Its study has been suggestive of a few thoughts, which will form the basis of the present article.

It will be remembered that the fundamental doctrine underlying the paper to which I have just referred was an utter rejection of the motion that cancer is a *heterologous* growth, in any proper sense of the word. On the contrary, the opinion was expressed, that, however obscured by imperfect development, by disordered growth, and by premature involution, it was quite possible to recognize the homology of cancer with ordinary developmental connective tissue, such as can be observed in granulations, in organizing lymph, in imperfectly developed fibrous tumours, or in the normal developing connective tissue of the embryo. If this opinion be correct—if cancer formation be less a special and specific process than a modification of processes which ordinarily are much less terrible in their consequences—it might be anticipated, *a priori*, that instances would constantly occur in which, though the processes were disordered *in the cancerous direction*, the modification would not be sufficiently decided to enable us authoritatively to denominate the growth *a cancer*. Accordingly, the doctrine of homology above propounded receives fresh confirmation in the fact that the whole group of semi-malignant tumours, as they have with *some* propriety been called, are readily recognized by their minute anatomy to be in fact *new formations of connective tissue.*[1] Under this category must, indeed, be placed the *recurring fibroid* and *malignant fibroid* tumours of Paget, the *fibro-nucleated* tumour of Bennet, such cases as those described by Laurence (*Surgical Diagnosis of Cancer*, 2d edit.) as *malignant fibro-plastic* tumours, with lupus, keloid, and some others of the semi-malignant affections.

Viewed from this stand-point, every case belonging properly to the category of transition forms assumes a high degree of interest, and deserves the special study of the earnest pathologist. Above all, investigation should be directed to determine how far the deviation of the growth in one direction or another from the healthy, unmodified plan of connective tissue development is associated with its approximation to cancer in clinical history. Our present knowledge of this group of growths is so limited that we are not now in possession of facts which will justify us to attempt an answer to such a question, and, with some few exceptions, the histories of those cases of this kind which have been put upon record are not sufficiently minute in their account of the *anatomy* of the new formation to enable us to make use of them in this connection.

If cancer be an imperfectly developed new formation of connective tissue, disordered in its evolution and involution, as Wedl has taught, and as my own studies incline me to believe, and if the essence of the modification which occurs is to be looked for (see *Am. Journ.*, *loc. cit.*) in the arrested development of many of the elementary forms, in their misshapen distension, and their premature fatty degeneration, it follows that in the study of transition forms special attention is to be devoted to these three categories, with the intention of observing how far the degree of anatomical disturbance corresponds to the peculiar clinical history of any given case.

In a word, the ultimate result of such investigations will be to decide whether innocence or malignancy are accidents which may occur in connection with any growth, so that *no* anatomical structure will insure that the case will or will not pursue a cancerous history, or whether, on the other hand, each special peculiarity of history impresses upon the local formation a modified anatomy.

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[1] In reply to several queries, it may be stated that I do not use the words "connective tissue" synonymously with white fibrous tissue, but apply them to *that mixture of white fibrous with yellow elastic tissue* which forms the bond of connection between the several tissues and organs of the body.

With these introductory remarks I proceed to the consideration of the case I have mentioned.

CASE. *Tumour of the left Breast in a Negro Girl* 15 *years old. History.*—The history of this patient, prior to the operation, was as follows: About a year before, while reaching over an ash-box, the pressure made upon one side of the box caused the opposite corner to fly up, giving her a violent blow upon the left breast. This was followed by a moderate degree of tenderness, swelling, and heat in the part. No treatment was employed, and the symptoms gradually subsided. After the swelling had quite left the breast, however, the patient noticed a small hard lump in the gland, which, though it made no prominence externally, could be distinctly recognized by the touch. The lump gradually increased in size until the time of the operation.

At that period the patient presented the following conditions: Her general health was good, she was plump, but not over fleshy, and menstruated regularly. The left breast formed a pendulous tumour, which was not adherent to the deeper parts, though closely attached to the skin. It was about twice the size of the opposite breast, was hard, smooth, very heavy, and evidently involved the whole mammary gland. There was no retraction of the nipple, which, however, was flattened down to the level of the areola.

The growth was the seat of uneasy sensations, compared by the patient to the pricking of pins, but there had never been severe pain in it at any time. At each menstrual period it enlarged, and subsided after the flow had ceased. The lymphatic glands of the neck and axilla were not affected.

As the tumour was rapidly increasing in size, Professor Smith determined to remove it, and it was accordingly amputated by him, February 2, 1859, at the surgical clinic of the University of Pennsylvania. The patient rapidly recovered from the effects of the operation, and was discharged February 14, the wound being then almost completely cicatrized. No tumours have occurred at any time, so far as known, in members of this family, the father, mother, and other relatives being healthy.

Remarks upon the History of this Case.—From the age of the patient, taken in connection with the seat of the growth, the probabilities *against* the cancerous character of the growth are very strong. Mr. Paget, whose ample opportunities entitle him to respect, says, in his work on surgical pathology (p. 512, Am. edit.), that scirrhous cancer of the breast "is extremely rare at any age under 25." While as to medullary cancer he remarks (p. 546): "The *breast* is among the parts which are most rarely the seats of medullary cancer."

Mr. Laurence, in the second edition of his work on the *Diagnosis of Surgical Cancer*, makes use of the following language; the Italics are his own (Laurence, *loc. cit.*, p. 51): "Supposing we are told that a female has a *tumour in the breast*, and nothing more: from this we can infer nothing. Supposing, again, we are told a female with a tumour *somewhere* is aged fourteen: from this we can infer nothing. But let us be told that that 'somewhere' is in the *breast*, and we at once, *cæteris paribus*, derive a most important conclusion, viz., that the chances of the tumour being of a cancerous nature are infinitely small."

But although the *probabilities* are therefore against the cancerous nature of the growth, the *possibility* of this event cannot be overlooked. It must also be conceded that the uniform shape of the growth, the absence of pain, and the fact that it was not at all adherent to the pectoral muscle, although it had attained such marked size, are all against the idea of its cancerous nature. The only points suggestive of cancer, from the history and external characters of the growth, were its rapid increase in size, its great weight, and its extreme hardness.

Anatomy of the Growth.—The morbid mass, as handed to me, consisted of an elliptical portion of skin in the centre of which was the nipple, of the subcutaneous fat in which the gland was imbedded, and of the mammary gland. Each of these parts presented points of interest, which may be separately noted.

The *skin*, in other respects normal, was unusually adherent to the subcutaneous layer of adipose tissue. The nipple was flattened, and the milk-ducts passing from the nipple to the gland almost entirely obliterated.

The subcutaneous adipose layer was unusually thick for a virgin breast, a thickening not due to an increase of the proper adipose tissue, but to an excess of the connective tissue by which the groups of adipose cells are held together. To the unaided eye the adipose layer, therefore, presented an unusual appearance, being preternaturally firm, and instead of the ordinary yellow lobulated aspect of this structure, exhibiting a dense, pinkish-cream coloured texture. Thin sections, cut with the Valentin's knife, exhibited the following conditions: The groups of adipose cells were quite normal, and lay as usual in the areolæ of a framework of connective tissue. This connective tissue, however, was preternaturally abundant and for the most part fully developed, though some few spindle-shaped nucleated cells, evidently on the road to fibre production (embryonic connective tissue elements), were observed. Especially here would I remark upon the predominance of the well-developed *bundles* of white fibrous tissue, over the yellow elastic fibres on the one hand, and the spindle-shaped cells on the other. The doctrinal suggestions of this observation will hereafter be commented upon.

The mammary gland, however, is, in this case, the point of highest interest. Nearly twice its natural size, and of preternatural density and weight, it was yet nevertheless readily isolable both from the pectoral muscle below and from the superficial adipose tissue above and laterally. It was especially to be observed that whatever the pathological lesion might be, *it affected the whole gland uniformly.* Its cut surface was homogeneous, and may be described as being less pink and more translucent than the normal gland tissue. The gland was succulent with a dense, transparent, albuminous fluid, which readily exuded on pressure; and when the cut surface was scraped with a knife, this fluid, rendered more or less turbid by the presence of blood-globules and of the anatomical elements of the growth, adhered to the blade.

The turbid bloody fluid thus obtained in no wise resembled, to the naked eye, the so-called cancer juice. The microscope revealed in it (besides blood-corpuscles) the following anatomical elements :—

(*a.*) Innumerable clear, oval, or rounded-oblong nuclei. These on the average were between $\frac{1}{2000}$ and $\frac{1}{3000}$ of an inch in their long diameter. Their contents were transparent and non-granular, and each contained one, or more rarely two, and in some instances even three, small, distinct, shining, spherical nucleoli. These nuclei only appeared as above described when viewed in the juice obtained by scraping, without reagents. The addition of water rendered them slightly granular, and acetic acid made their contours more distinct, at the same time causing them to become so granular as to obscure the nucleoli. After the most severe and impartial study, I am obliged to state that these bodies presented no points by which they could be distinguished from the nuclei of healthy developing connective tissue cells (such for example as those observable in the skin of an embryo of 4 months), except the fact that they were not contained in cells.

(*b.*) Accordingly, I was not surprised to observe also elongated, spindle-shaped cells, isomorphous with those of healthy, developing, connective tissue wherever found. These, however, were comparatively few in number; their nuclei were in all respects identical with those above described.

(*c.*) A few pale, oval cells, extremely delicate, with transparent contents, were also observed.

(*d.*) A few granules, and fat-globules (Aschersonian vesicles), were also observed, but they were not more abundant than in any normal tissue.

Numerous thin sections were cut with the Valentin's knife from various parts of the growth. These everywhere revealed essentially the following conditions :—

Groups of the nuclei above described, and occasionally groups of the cells described at (*c*), lay in the meshes of a stroma of well-developed connective tissue. This stroma was composed of exceedingly handsome, well-developed bundles of white fibrous tissue, with which but a moderate quantity of yellow elastic tissue was mixed. I should say, speaking approximatively, that the absolute quantity of well-developed, normal, white fibrous tissue was between twice and thrice that in a normal gland. The nuclei often lay in little groups of two or three, in the angles of the fibres, and sometimes in larger masses which could in nowise be interpreted as representing the gland-vesicles or the milk-ducts, while the cells never lying in spaces so shaped that they might not represent modifications of these normal textures, were sometimes also contained in cavities the shape and relations of which imperatively required them to be regarded as the terminal cæca of the lactiferous tubes.

The thin sections were beautifully transparent, and nowhere presented any evidences of fatty degeneration.

Remarks upon the Anatomy of this Growth.—The above details present the prominent points of the anatomy of this tumour. I have presented them nakedly that others may use them as they please, and may separate at a glance the data observed, from the deductions based upon them. From these data, however, the following remarks would appear legitimately to spring:—

1. With regard to the excessive quantity of well-developed white fibrous tissue observable both in this mammary gland and in the subcutaneous adipose tissue removed with it, it is especially to be observed that it is not only wholly disproportioned in quantity, as compared with a normal gland, but it is also excessive as compared with the quantity of yellow elastic tissue found. And here also the extremely small number of healthy spindle-shaped cells (young connective tissue elements) observed both in the superficial adipose tissue, and in the gland itself, becomes significant.

Before, however, proceeding in the attempt to interpret these phenomena, it will be necessary to make a remark on the normal process of growth in the connective tissue of the economy.

Up to a certain period in the development of the embryo, the increase in quantity of the connective tissue elements probably depends almost exclusively on the development of new cells, and their gradual transformation into white fibrous bundles, and yellow elastic fibres. An increase due to the same conditions probably continues to birth, and also, but with gradual diminution in amount, until a period in childhood which has not been definitely determined. (See Kölliker, Am. ed., p. 135.) But the increase is also due, from an early period in embryonic life, to an actual *growth* in length and thickness of the individual white fibrous bundles, and yellow elastic fibres, which become simultaneously both longer and thicker. In the case of the white fibrous bundles the number of fibrilli is apparently increased as the bundle increases in thickness, an increase due to the direct appropriation by the growing bundle of the requisite material from that nutritive plasma, in which, during healthy life all the tissues are bathed. To this process is due all the increase of the connective tissue of the economy which occurs from the cessation of the development of fibre-cells in childhood to fully developed adult life.

It must also be admitted that this growth in the size of the individual elements may go on in any part chiefly in the white fibrous bundles, or, on the other hand, chiefly in the yellow elastic fibres, otherwise how shall we account for the fact that in some parts (*e. g.*, the ligamentum nuchæ) the elastic fibres are not only more numerous, which can be accounted for by supposing a greater proportional number of formative cells, but also the individual fibres of much greater diameter than those of some other parts of the body.

The above remarks will at once make intelligible what many pathological observations have rendered probable to me, that there are two kinds of *pathological increase in the quantity of connective tissue in any part.* One, which is best described as *a new formation of connective tissue,* which imitates most closely the embryonic process; cells arising in obedience to the law of free cell-development, which are transformed, some into white fibrous bundles, some into yellow elastic fibres. This is the process which goes on in the formation of cicatrices, and in the development of inflammatory exudations generally, as well as in many new formations the initial step of which cannot be positively affirmed to be circulatory disturbance. The second process will be best described as *true hypertrophy* of the connective tissue of a part, and especially of its white fibrous element. As the former process repeats essentially the normal *embryonic development* of connective tissue, so this repeats essentially the ordinary process of *growth* which has been shown to obtain to a great extent in infancy, and almost exclusively in the increase of this tissue during the time of transition between childhood and adult life. In *true hypertrophy,* in the sense in which I here use the term, no embryonic elements are formed, the bundles grow in thickness, and perhaps also in length, by the direct assimilation to themselves of material from the blood.

At the same time, however, that I discriminate between these two separate processes, I am free to admit that in very many instances they occur simultaneously, and that there is at once a *true hypertrophy* and a *new formation* of connective tissue. This appears to have been the case in the tumour under consideration. Without wishing to be dogmatic on the point, the absence of transition forms between the spindle-shaped cells, and the firm, old, fully-developed bundles, inclines me to believe that the mass of increase in the connective tissue both of the gland and the fat about it is due to such a growth in the normal white fibrous bundles of the part as would come under the head of what I have defined as true hypertrophy. At the same time, with the hypertrophy, the existence of the embryonic elements demonstrates a certain amount of new formation.

2. The consideration of the *free nuclei* above described is not without its difficulties, but the fact that they are isomorphous with the nuclei of the spindle-shaped cells, also observed, would seem to point out a genetic relation between the two. I regard them as the nuclei of formative connective tissue cells, the development of which has not yet proceeded so far as to the formation of a cell-wall.

3. More difficult is the interpretation of the cells described above at (*c*). Upon the whole, I regard them as probably the epithelial cells of the smaller milk-ducts, and of their terminal follicles.

It would appear, then, from the considerations adduced, that at least two distinct and simultaneous processes existed in the breast under study. 1. True hypertrophy of the connective tissue of the parts in the manner above laid down. 2. A new formation of connective tissue, which was represented in the case of the superficial adipose layer by a few spindle-shaped cells, in the case of the gland by similar cells and the abundant formation of nuclei. This point in the investigation attained, the question at once arises, Is this an *innocent* or *malignant* new formation of connective tissue? Have we here any evidences that the new formation is not pursuing the usual history of connective tissue development? And if so, is the disorder and distortion of the process such as to justify the designation *cancerous?*

Our attempt to answer this question must be based exclusively upon the anatomical data afforded by the study of the new-formed elements. The coexistence of what I have called *true hypertrophy* of the connective tissue involved, however interesting it may be in a general point of view, is of no value in diagnosis. Such a hypertrophy exists not only in benignant conditions, *but also in cancer.* The careful study of a series of hard cancers of the breast will convince any unprejudiced observer of this fact.

In the study of the new-formed elements, then, confining ourselves to them alone, we cannot fail to note the great numerical predominance of nuclei over more highly developed forms; and, when the age of the disease is taken into consideration, it will hardly be disputed that we are to regard their development as preternaturally retarded. If we compare the innumerable free nuclei with the few spindle-shaped cells, we recognize, to a certain extent at least, the same inequality in the degree of development of the several elements which is to be observed in cancer. But while this is admitted, it must also be confessed that we fail to recognize the misshapen distension and the fatty degeneration of cancerous elements.

Our position, then, in regard to this breast, may be thus stated: the cancerous modification of pathological connective tissue growths lies essentially in three categories—the disorder in the degree of development, the misshapen distension, and the fatty degeneration of the elements. In the growth in question the disordered development occurs, but there is no misshapen distension, no fatty degeneration. Can we, in the absence of the latter two conditions, affirm the growth to be cancer? In the present state of my knowledge on this subject, I would answer, certainly not. Yet, as the disordered development is a deviation in the cancerous direction, I cannot positively pronounce the growth to be innocent; for the possibility must not be overlooked, that, if extirpation had not interfered with the progress of the affection, distension and degeneration of the elements might have ultimately occurred.

I therefore place the case upon record as belonging to the category of transition forms, and shall watch with interest its clinical history.

II. *Anatomy of a Case of Retrograde Cancer.*—The purpose of this article is briefly to record certain anatomical peculiarities in a scirrhous tumour of the breast, which was removed at the surgical clinic of the University of Pennsylvania, and which I was permitted to study, through the politeness of Professor Henry H. Smith. To some it may appear a useless task to add to the details we already possess connected with the minute anatomy of malignant tumours; but, properly regarded, each additional fact is a step, not towards complexity, but towards simplicity, and the scientifically directed attempt to account for the protean forms which new formations assume must ultimately lead to the determination of those guiding laws which lie at the bottom of them all.

History of the Case.—An old Irish woman, more than sixty years of age, presented a tumour, rather larger than a hen's egg, in the left breast. The tumour was ulcerated at several points, from which florid granulations sprouted. The skin surrounding these points was livid, and firmly adherent to the subjacent growth; the nipple was retracted, but the morbid structures were not adherent to the pectoral muscle, nor was there any enlargement of the cervical or axillary lymphatic glands. This tumour had been growing between six and seven years; it first ulcerated about two years ago. During the whole period of its growth it has been the seat of paroxysms of severe lancinating pains.

The bodily health of the patient is good, but her friends state her to be subject to occasional periods of mental aberration.

The opposite breast is in the usual atrophied condition of the patient's time of life.

The breast was removed at the Clinic of the University of Pennsylvania, Saturday, February 5, 1859.

Remarks upon the History of this Case.—The general appearance and history of this case were probably quite sufficient for a diagnosis without any inquiry into the minute anatomy of the tumour.

Anatomy of the Tumour.—The morbid mass, as it came into my hands for study, consisted of an elliptical piece of skin, in which the nipple occupied one focus of the ellipse, of the whole mammary gland, and of some of the surrounding adipose tissue. The nipple was retracted, the adipose layer *over* the tumour had disappeared, and the diseased gland came into immediate contact with the thin, atrophied, livid skin, to which it was adherent. There were several ulcerated points on the projecting portion of the mass from which scanty vascular granulations protruded.

The tumour being laid open from behind by a longitudinal incision was found to present an irregular central cavity two-thirds filled with a yellowish, friable, solid mass, which was adherent at several points to the walls of the cavity.

All of the cavity not occupied by the central mass was filled with a yellowish creamy fluid in quantity rather more than half a fluidounce, which, to the naked eye, much resembled pus. The odour of this fluid as well as of the friable mass was exceedingly offensive.

The cavity was bounded by a wall or crust one-half to three-fourths of an inch in diameter, which represented the remainder of the diseased gland, and ran out irregularly into the surrounding textures. Sections of this portion of the growth presented, on the surface, a pinkish cream colour, over which radiated yellow reticulated lines.

Each of the above portions were separately studied.

The purulent looking fluid contained in the central cavity presented the following elements:—

(*a.*) Innumerable granules, the majority of which were Aschersonian vesicles of the most variable sizes.

(*b.*) A few angular and granular *nuclei* which were utterly indistinguishable from those of softened *tubercle.*

(*c.*) Cholesterin plates.

No bodies resembling pus-corpuscles were observed.

The elements of the central friable mass were identical with these, but aggregated together so as to form a tolerably solid substance.

The outer crust or shell yielded on scraping a moderately opaque cream-like "cancer-juice," in which the following elements were observed:—

(*d.*) *Nuclei;* large, clear, oval or rounded oblong, with single, double, or triple, large, shining vesicular nucleoli. These nuclei had transparent or dimly granular contents, and varied in length from $\frac{1}{1200}$ to $\frac{1}{3500}$ of an inch. The great size and irregular shape of many of the nucleoli was noteworthy. The nuclei became more distinct and their contents granular on the addition of water, and yet more so on the addition of acetic acid. Besides the nuclei above described there were also a few similar nuclei in which a certain amount of fatty degeneration had occurred, as evidenced by the presence of numerous Aschersonian vesicles.

(*e.*) *A few spindle-shaped cells,* the ordinary normal young connective tissue elements.

(*f.*) A small number (that is, few as compared with the number of the nuclei) of *distorted* young connective tissue elements, huge misshapen cells of the most varied shape with one, two or more nuclei, identical in appearance with the nuclei above described. These answered well to the characters of the so called "cancer cells."

(*g.*) A few of those aggregated heaps of granules, usually known as compound granular cells.

(*h.*) Innumerable granules, chiefly Aschersonian vesicles.

Numerous thin sections of this part of the morbid mass were cut with the Valentin's knife, and the usual arrangement of similar growths was found to obtain. The elementary forms above described were aggregated together into larger or smaller groups, and lay in the meshes of a connective tissue stroma, which doubtless represented the primitive connective tissue of the gland, *plus* a certain increase due to true hypertrophy in the sense laid down in the first of these papers (vide *supra*), as well as to new formation.

The numerical relations of the cells to the nuclei, as thus studied, was not so disproportionately small as might have been supposed from the study of the juice; yet a vast predominance in the number of the nuclei was still observable.

Perhaps the most noteworthy fact in such sections, when studied with a high power, was the degree of fatty degeneration, as evidenced by the innumerable Aschersonian vesicles, not only in the cells and nuclei, but also in the fibrous stroma of the growth. In some points, indeed, the degree of fatty metamorphosis was such as to render the preparation too opaque to be satisfactorily studied.

When such sections were studied with lower powers, it was observed that these opaque parts were distributed with a certain degree of order, appearing with a two inch object-glass as a brownish-black (or with reflected light as a yellowish-white) branching network, which was to a certain imperfect degree recognizable to the naked eye. It is, as is well known, to such a branching network that the designation *reticulum* is given; and Johannes Müller, who did not know that this yellow reticulum was only the optical expression of the excessive fatty degeneration of certain parts, made a special variety of cancerous growths, "reticular cancer," grouping under this head all cancers which exhibited a reticulum.

The *granulations* above described, as sprouting from various points of the tumour, presented the following conditions: In the more superficial projections the only elements observed were innumerable nuclei identical with those described above at (*d*). These were piled irregularly together, no definite order being observed.

In the deeper parts, as shown by thin sections, similar nuclei lay in groups in the meshes of a vascular stroma, composed chiefly of ordinary young connective tissue cells.

Remarks upon the Anatomy of this Growth.—This tumour would appear to belong to the category of retrograde cancer. I interpret the purulent fluid occupying the central cavity as *softened cancer*. It is not pus in any proper sense of the word. I regard it as the ultimate result of that destructive fatty degeneration, which, in one degree or another, is characteristic of cancer. The offensive odour of this fluid is simply the expression of the putrefactive processes commenced in a substance whose vitality is lost.

The central friable mass is simply to be regarded as a slough. It exhibits well the condition of a cancer to which certain continental writers have applied the term *necrosis*, a term usually limited in this country and England to gangrene as it occurs in bones.

Some of the earlier writers supposed that the softening and breaking down of a cancerous tumour invariably began in the central portions, as in this case. The analogy of phlegmons and of softening tubercle was in favour of this idea, which, however, has been disproved by numerous observations which have shown that the softening and sloughing of the cancerous growth may begin in *any part of its substance.*

Various theories have been propounded to account for the tendency of cancerous growths to ulcerate and slough. The idea, often promulgated, that the part of the cancerous mass farthest removed from the vital influence of healthy tissues, generally sloughs, and that on account of its distance from them, is met by the broad fact that whereas some cancerous tumours ulcerate and slough before they have attained the size of a hen's egg, others acquire a prodigious bulk before they undergo this change. For myself the anatomical conditions of this case, and of every other sloughing or ulcerating cancer it has been my fortune to study, compel me to conclude that the ulceration and sloughing of these growths is the inevitable result of an exquisite degree of that fatty degeneration which is characteristic of cancer. The unknown momentum which determines the lesser degree of this process determines also the higher.

The study of this case, moreover, suggests an anatomical reason for the fact that cancerous ulcers do not generally cicatrize. It is simply due to the circumstance (which I have noticed also in several other cancerous sores) that the granulations sprouting up in such a sore, whatever their external aspect, are in fact not ordinary granulations but *cancer substance,* and they therefore pursue the history of cancer, instead of undergoing those transformations which occur in healthy granulations.

At the same time, the fact must not be forgotten that the cancerous ulcer *does sometimes,* though rarely, cicatrize. I have never had the opportunity of observing, and I know of no recorded observations which show, whether in such a case the alteration in the usual history is due to any prior change in the anatomy of the granulations.

ART. II.—*Case of Carbuncular Inflammation of the Lip; with some remarks on this anomalous form of inflammation.* By FREDERIC D. LENTE, M. D., Surgeon to "West Point Foundry."

Feb. 19th, 1858. Lieut. M., U. S. Navy, a stout healthy looking man, about 40, had been rather "under the weather" for two weeks, with gastric derangement, &c. He had left the South a few days ago, just before a sudden cold change in the weather, and, in coming up Chesapeake Bay, exposed himself on deck at night. He was soon after attacked with shiverings, and pains in his muscles and bones, with headache. These symptoms he still complains of. Some days ago, he noticed a small pimple